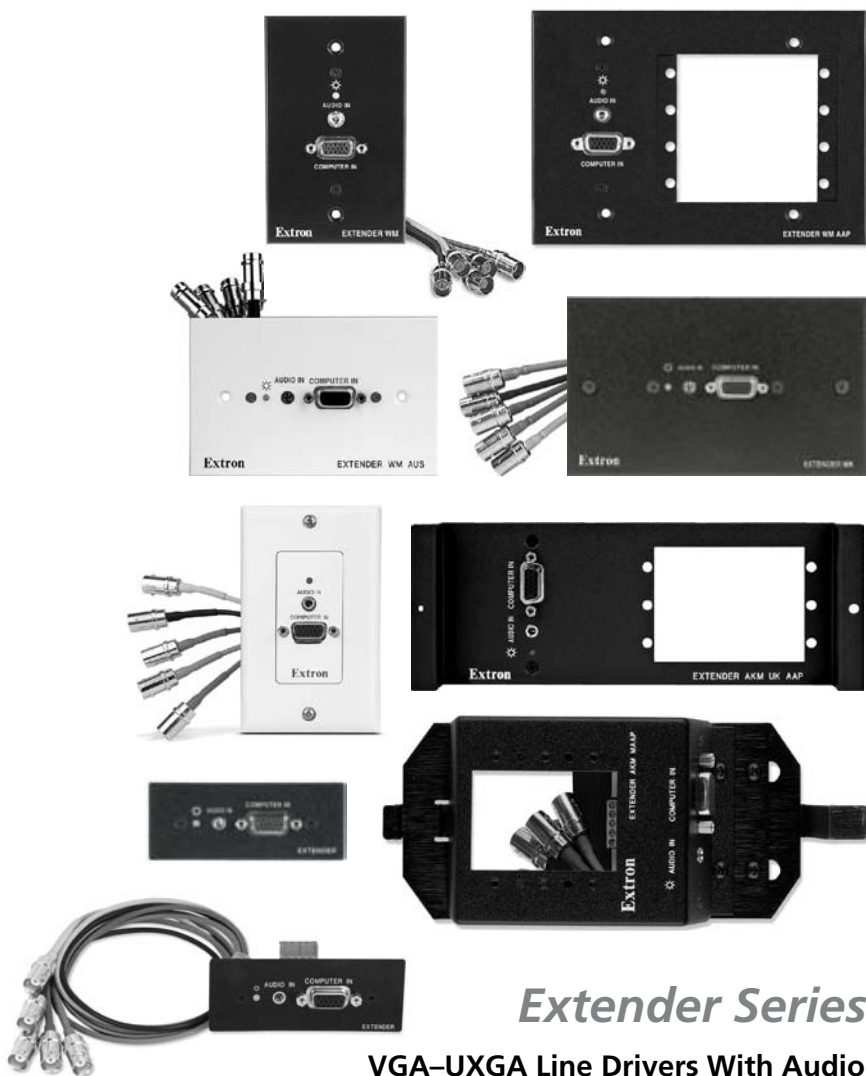


User's Manual



Extender Series

VGA-UXGA Line Drivers With Audio

Precautions

Safety Instructions • English



This symbol is intended to alert the user of important operating and maintenance (servicing) instructions in the literature provided with the equipment.



This symbol is intended to alert the user of the presence of uninsulated dangerous voltage within the product's enclosure that may present a risk of electric shock.

Caution

Read Instructions • Read and understand all safety and operating instructions before using the equipment.

Retain Instructions • The safety instructions should be kept for future reference.

Follow Warnings • Follow all warnings and instructions marked on the equipment or in the user information.

Avoid Attachments • Do not use tools or attachments that are not recommended by the equipment manufacturer because they may be hazardous.

Consignes de Sécurité • Français



Ce symbole sert à avertir l'utilisateur que la documentation fournie avec le matériel contient des instructions importantes concernant l'exploitation et la maintenance (réparation).



Ce symbole sert à avertir l'utilisateur de la présence dans le boîtier de l'appareil de tensions dangereuses non isolées posant des risques d'électrocution.

Attention

Lire les instructions • Prendre connaissance de toutes les consignes de sécurité et d'exploitation avant d'utiliser le matériel.

Conservier les instructions • Ranger les consignes de sécurité afin de pouvoir les consulter à l'avenir.

Respecter les avertissements • Observer tous les avertissements et consignes marqués sur le matériel ou présents dans la documentation utilisateur.

Eviter les pièces de fixation • Ne pas utiliser de pièces de fixation ni d'outils non recommandés par le fabricant du matériel car cela risquerait de poser certains dangers.

Sicherheitsanleitungen • Deutsch



Dieses Symbol soll dem Benutzer in der im Lieferumfang enthaltenen Dokumentation besonders wichtige Hinweise zur Bedienung und Wartung (Instandhaltung) geben.



Dieses Symbol soll den Benutzer darauf aufmerksam machen, daß im Inneren des Gehäuses dieses Produktes gefährliche Spannungen, die nicht isoliert sind und die einen elektrischen Schock verursachen können, herrschen.

Achtung

Lesen der Anleitungen • Bevor Sie das Gerät zum ersten Mal verwenden, sollten Sie alle Sicherheits- und Bedienungsanleitungen genau durchlesen und verstehen.

Aufbewahren der Anleitungen • Die Hinweise zur elektrischen Sicherheit des Produktes sollten Sie aufbewahren, damit Sie im Bedarfsfall darauf zurückgreifen können.

Befolgen der Warnhinweise • Befolgen Sie alle Warnhinweise und Anleitungen auf dem Gerät oder in der Benutzerdokumentation.

Keine Zusatzgeräte • Verwenden Sie keine Werkzeuge oder Zusatzgeräte, die nicht ausdrücklich vom Hersteller empfohlen wurden, da diese eine Gefahrenquelle darstellen können.

Instrucciones de seguridad • Español



Este símbolo se utiliza para advertir al usuario sobre instrucciones importantes de operación y mantenimiento (o cambio de partes) que se desean destacar en el contenido de la documentación suministrada con los equipos.



Este símbolo se utiliza para advertir al usuario sobre la presencia de elementos con voltaje peligroso sin protección aislante, que puedan encontrarse dentro de la caja o alojamiento del producto, y que puedan representar riesgo de electrocución.

Precaución

Leer las instrucciones • Leer y analizar todas las instrucciones de operación y seguridad, antes de usar el equipo.

Conservar las instrucciones • Conservar las instrucciones de seguridad para futura consulta.

Obedecer las advertencias • Todas las advertencias e instrucciones marcadass en el equipo o en la documentación del usuario, deben ser obedecidas.

Evitar el uso de accesorios • No usar herramientas o accesorios que no sean específicamente recomendados por el fabricante, ya que podrían implicar riesgos.

Warning

Power sources • This equipment should be operated only from the power source indicated on the product. This equipment is intended to be used with a main power system with a grounded (neutral) conductor. The third (grounding) pin is a safety feature, do not attempt to bypass or disable it.

Power disconnection • To remove power from the equipment safely, remove all power cords from the rear of the equipment, or the desktop power module (if detachable), or from the power source receptacle (wall plug).

Power cord protection • Power cords should be routed so that they are not likely to be stepped on or pinched by items placed upon or against them.

Servicing • Refer all servicing to qualified service personnel. There are no user-serviceable parts inside. To prevent the risk of shock, do not attempt to service this equipment yourself because opening or removing covers may expose you to dangerous voltage or other hazards.

Slots and openings • If the equipment has slots or holes in the enclosure, these are provided to prevent overheating of sensitive components inside. These openings must never be blocked by other objects.

Lithium battery • There is a danger of explosion if battery is incorrectly replaced. Replace it only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

Avvertimento

Alimentazioni • Ne faire fonctionner ce matériel qu'avec la source d'alimentation indiquée sur l'appareil. Ce matériel doit être utilisé avec une alimentation principale comportant un fil de terre (neutre). Le troisième contact (de mise à la terre) constitue un dispositif de sécurité: n'essayez pas de le contourner ni de le désactiver.

Déconnexion de l'alimentation • Pour mettre le matériel hors tension sans danger, déconnectez tous les cordons d'alimentation de l'arrière de l'appareil ou du module d'alimentation de bureau (s'il est amovible) ou encore de la prise secteur.

Protection du cordon d'alimentation • Achémener les cordons d'alimentation de manière à ce que personne ne risque de marcher dessus et à ce qu'ils ne soient pas écrasés ou pincés par des objets.

Réparation-maintenance • Faire exécuter toutes les interventions de réparation-maintenance par un technicien qualifié. Aucun des éléments internes ne peut être réparé par l'utilisateur. Afin d'éviter tout danger d'électrocution, l'utilisateur ne doit pas essayer de procéder lui-même à ces opérations car l'ouverture ou le retrait des couvercles risquent de l'exposer à de hautes tensions et autres dangers.

Fentes et orifices • Si le boîtier de l'appareil comporte des fentes ou des orifices, ceux-ci servent à empêcher les composants internes sensibles de surchauffer. Ces ouvertures ne doivent jamais être bloquées par des objets.

Lithium Batterie • Il y a danger d'explosion s'il y a un remplacement incorrect de la batterie. Remplacer uniquement avec une batterie du même type ou d'un type équivalent recommandé par le constructeur. Mettre au rebut les batteries usagées conformément aux instructions du fabricant.

Vorsicht

Stromquellen • Dieses Gerät sollte nur über die auf dem Produkt angegebene Stromquelle betrieben werden. Dieses Gerät wurde für eine Verwendung mit einer Hauptstromleitung mit einem geerdeten (neutralen) Leiter konzipiert. Der dritte Kontakt ist für einen Erdschluß, und stellt eine Sicherheitsfunktion dar. Diese sollte nicht umgangen oder außer Betrieb gesetzt werden.

Stromunterbrechung • Um das Gerät auf sichere Weise vom Netz zu trennen, sollten Sie alle Netzkabel aus der Rückseite des Gerätes, aus der externen Stromversorgung (falls dies möglich ist) oder aus der Wandsteckdose ziehen.

Schutz des Netzkabels • Netzkabel sollten stets so verlegt werden, daß sie nicht im Weg liegen und niemand darauf treten kann oder Objekte darauf- oder unmittelbar dahingestellt werden können.

Wartung • Alle Wartungsmaßnahmen sollten nur von qualifiziertem Servicepersonal durchgeführt werden. Die internen Komponenten des Gerätes sind wartungsfrei. Zur Vermeidung eines elektrischen Schocks versuchen Sie in keinem Fall, dieses Gerät selbst öffnen, da beim Entfernen der Abdeckungen die Gefahr eines elektrischen Schlags und/oder anderer Gefahren bestehen.

Schlitze und Öffnungen • Wenn das Gerät Schlitze oder Löcher im Gehäuse aufweist, dienen diese zur Vermeidung einer Überhitzung der empfindlichen Teile im Inneren. Diese Öffnungen dürfen niemals von anderen Objekten blockiert werden.

Lithium-Batterie • Explosionsgefahr, falls die Batterie nicht richtig ersetzt wird. Ersetzen Sie verbrauchte Batterien nur durch den gleichen oder einen vergleichbaren Batterietyp, der auch vom Hersteller empfohlen wird. Entsorgen Sie verbrauchte Batterien bitte gemäß den Herstelleranweisungen.

Advertencia

Alimentación eléctrica • Este equipo debe conectarse únicamente a la fuente/tipo de alimentación eléctrica indicada en el mismo. La alimentación eléctrica de este equipo debe provenir de un sistema de distribución general con conductor neutro a tierra. La tercera pata (puesta a tierra) es una medida de seguridad, no puentearla ni eliminarla.

Desconexión de alimentación eléctrica • Para desconectar con seguridad la alimentación de alimentación eléctrica al equipo, desconectar todos los cables de alimentación en el panel trasero del equipo, o desconectar el módulo de alimentación (si fuera independiente), o desconectar el cable del receptáculo de la pared.

Protección de los cables de alimentación • Los cables de alimentación eléctrica se deben instalar en lugares donde no sean pisados ni apretados por objetos que se puedan apoyar sobre ellos.

Reparaciones/mantenimiento • Solicitar siempre los servicios técnicos de personal calificado. En el interior no hay partes a las que el usuario debe acceder. Para evitar riesgo de electrocución, no intentar personalmente la reparación/mantenimiento de este equipo, ya que al abrir o extraer las tapas puede quedar expuesto a voltajes peligrosos u otros riesgos.

Ranuras y aberturas • Si el equipo posee ranuras o orificios en su caja/altoaviento, es para evitar el sobrecalentamiento de componentes internos sensibles. Estas aberturas nunca se deben obstruir con otros objetos.

Batería de litio • Existe riesgo de explosión si esta batería se coloca en la posición incorrecta. Cambiar esta batería únicamente con el mismo tipo (o su equivalente) recomendado por el fabricante. Desachar las baterías usadas siguiendo las instrucciones del fabricante.

安全须知 • 中文



这个符号提示用户该设备用户手册中有重要的操作和维护说明。



这个符号警告用户该设备机壳内有暴露的危险电压，有触电危险。

注意

阅读说明书 • 用户使用该设备前必须阅读并理解所有安全和使用说明。

保存说明书 • 用户应保存安全说明书以备将来使用。

遵守警告 • 用户应遵守产品和用户指南上的所有安全和操作说明。

避免追加 • 不要使用该产品厂商没有推荐的工具或追加设备，以避免危险。

警告

电源 • 该设备只能使用产品上标明的电源。设备必须使用有地线的供电系统供电。第三条线（地线）是安全设施，不能不用或跳过。

拔掉电源 • 为安全地从设备拔掉电源，请拔掉所有设备后或桌面电源的电源线，或任何接到市电系统的电源线。

电源线保护 • 妥善布线，避免被踩踏，或重物挤压。

维护 • 所有维修必须由认证的维修人员进行。设备内部没有用户可以更换的零件。为避免出现触电危险不要自己试图打开设备盖子维修该设备。

通风孔 • 有些设备机壳上有通风槽或孔，它们是用来防止机内敏感元件过热。不要用任何东西挡住通风孔。

锂电池 • 不正确的更换电池会有爆炸的危险。必须使用与厂家推荐的相同或相近型号的电池。按照生产厂的建议处理废弃电池。

FCC Class A Notice

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. The Class A limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

NOTE

This unit was tested with shielded cables on the peripheral devices. Shielded cables must be used with the unit to ensure compliance with FCC emissions limits.

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68-552-01 **Rev. K**
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Extender Series

1

Chapter One

Introduction

About this Manual

About the Extender Series VGA Line Drivers

Introduction

About this Manual

This manual contains information about the Extron Extender series line drivers, and on how to operate and configure them. “Extender” or “line driver” are used to refer to all models interchangeably when instructions apply to more than one model.

About the Extender Series VGA Line Drivers

The Extron Extender Series are one-input VGA–UXGA line drivers with audio. There are nine models in the series:

- Extender AAP
- Extender AAP EX
- Extender WM
- Extender D
- Extender WM AAP
- Extender WM AUS
- Extender MK
- Extender AKM UK AAP
- Extender AKM MAAP.

They boost the video signal between a laptop or desktop computer and a monitor or projector. Each has a 300 MHz (-3 dB) video bandwidth.

Each line driver accepts one computer-video input and one stereo audio input. Each Extender also features one buffered VGA-type RGB output and one stereo audio output. With an optional Mac/VGA adapter, the Extender can also buffer Macintosh signals.

Differences between the models

All Extender models are functionally identical but they have different mounting options.

For details about mounting the Extender AAP, Extender WM, Extender D, Extender WM AAP, Extender WM AUS, and the Extender MK, see “Preparing the Site and Installing the Wall Box” in chapter 2.

For Extender AAP EX mounting instructions, refer to the user’s manual or installation manual for the appropriate model of HSA Hideaway Surface Access enclosure.

For Extender AKM UK AAP mounting instructions, refer to the *AKM UK Series Installation Guide*, available at <http://www.extron.com>.

For Extender AKM MAAP mounting instructions, refer to the *Extender AKM MAAP Installation Guide*, available at <http://www.extron.com>.

Features

Video signal boosting — The selectable gain/peaking settings boost video signals to compensate for signal degradation caused by long cables. The Extender can send a high resolution signal up to 250 feet (75 m) through Extron's M59 Series mini high resolution cable.

Sync restoration — Each Extender restores low level sync voltages found on many laptop PCs (as low as two volts) to normal TTL levels.

Audio buffering — Unbalanced stereo audio inputs can be output as balanced audio for long cable runs.



Extender Series

2 **Chapter Two**

Installation

UL Guidelines

Installation Instructions

Preparing the Site and Installing the Wall Box

Front Panel Features and Cabling

Top/Rear/Bottom panel Features and Cabling

Mounting the Extenders

Application Diagrams

Installation

CAUTION *Installation and service must be performed by authorized personnel only. This product should be used with a UL approved electrical box. See “UL Guidelines”, below.*

UL Guidelines

1. The Extender must be installed in an Underwriters Laboratories (UL) listed junction box. The UL approved electrical wall box (junction box) is not included with the unit; the installer is responsible for obtaining and installing the box.
2. The unit must be installed with accordance with the National Electrical Code and with local electrical codes.

Installation Instructions

Depending on the model, the Extenders can be mounted into furniture, a wall, an Ackermann floorbox, or an Extron HSA 400 Series or HSA 800 Series enclosure.

For Extender AKM UK AAP mounting instructions, refer to the *AKM UK Series Installation Guide*.

For Extender AKM MAAP mounting instructions, refer to the *AKM MAAP Installation Guide*.

CAUTION *The Extender must be installed in a UL listed wall box, which the installer is responsible for obtaining.*

For Extender AAP EX mounting instructions, refer to the user’s manual or installation manual for the appropriate model of HSA Hideaway Surface Access enclosure.

NOTE *The Extender AAP EX does not require a wall box if it will be installed into an Extron HSA 400 Series or HSA 800 Series surface access product. If you install an Extender AAP EX without an HSA, you must use a wall box.*

Preparing the Site and Installing the Wall Box

Considerations

Choose a location that allows cable runs without interference. Allow enough depth for both the wall box and the cables. You may need to install the cables into the wall, furniture, or conduits before installing the line driver.

- The **Extender AAP** or **Extender AAP EX** can be installed in an Extron two-gang, four-gang, or half rack width AAP Architectural Adapter Plate or in the faceplate of another Extron device that accepts AAP plates, such as an interface

or distribution amplifier. Refer to the mounting instructions for the adapter plate or device.

- The **Extender AAP EX** is usually installed into an HSA 400 Series or HSA 800 Series surface access enclosure.
- The **Extender WM** can be installed in a standard or compact one-gang electrical wall box. This is also true for the Extender D, though it requires a standard Decora®-style wall plate.
- The **Extender WM AUS** can be installed in a standard or compact Australian one-gang electrical wall box.
- The **Extender WM AAP** can be installed in a three-gang wall box, and its faceplate accepts up to four single height Extron Architectural Adapter Plates (AAPs).
- The **Extender MK** can be mounted into a standard, shallow knockout switch box (also known as a KO box or MK box) that is used in Singapore, the United Kingdom, and Australia.

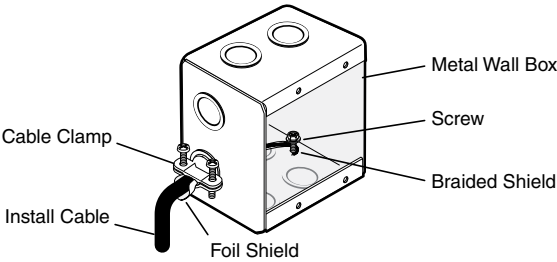
The installation must conform to national and local electrical codes and to the Extender's size requirements. Dimensional drawings and templates are provided in the appendix.

Procedure

1. Refer to the template that corresponds to the Extender model and wall box being used.

NOTE *The templates are not shown at full size. Pay attention to the measurements shown on the templates.*

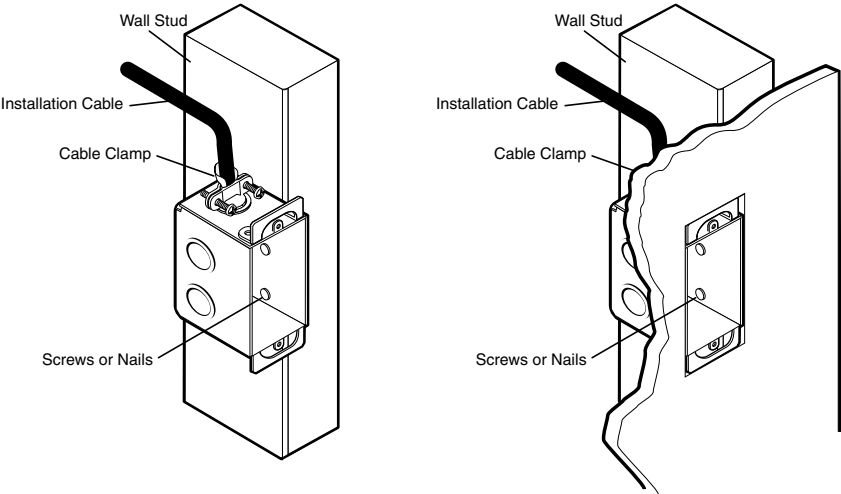
2. Mark the guidelines for the opening on the wall or furniture.
 - If the Extender will be installed in a wall box, place the box against the installation surface and draw a line on it around the outside of the box.
 - If the Extender will be installed without a wall box (using mud rings or fastening it directly to the wall or furniture), measure and mark the surface for the cutout area indicated in the template.
3. Cut out the material from the marked area.
4. Check the opening size by inserting the wall box (if used) or the Extender (if no box is used) into the opening. The box and line driver should fit easily into the opening. Enlarge or smooth the edges of the opening if needed.
5. Feed cables through the wall box punch-out holes, and secure them with cable clamps to provide strain relief.
6. Exposed cable shields (braids or foil) are potential sources of short circuits. Trim back and/or insulate shields with heat shrink.



Grounding outer braided and foil shields

WARNING To prevent short circuits, the outer foil shield can be cut back to the point where the cable exits the cable clamp. Both braided and foil shields should be connected to an equipment ground at the other end of the cable.

7. Insert the wall box into the opening, and attach it to the wall, stud, or furniture.
 - For the Extender WM, Extender WM AAP, Extender WM AUS, Extender D, and the Extender AAP or Extender AAP EX (if installed in a two- or four-gang AAP plate), attach the wall box to the wall stud or furniture with nails or screws, leaving the front edge flush with the outer wall or furniture surface. See the following illustration, which applies to one-, two-, three-, and four-gang wall boxes.

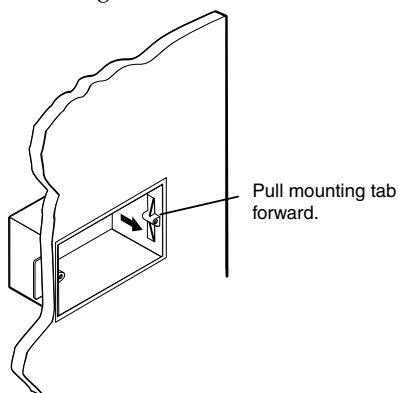


Attaching a wall box to a wall stud

If attaching the wall box to wood, use four #8 or #10 screws or 10-penny nails. A minimum of ½" (1.3 cm) of screw threads must penetrate the wood.

If attaching the wall box to metal studs or furniture, use four #8 or #10 self-tapping sheet metal screws or machine bolts with matching nuts.

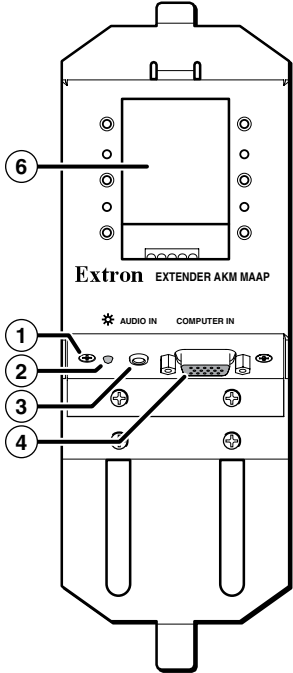
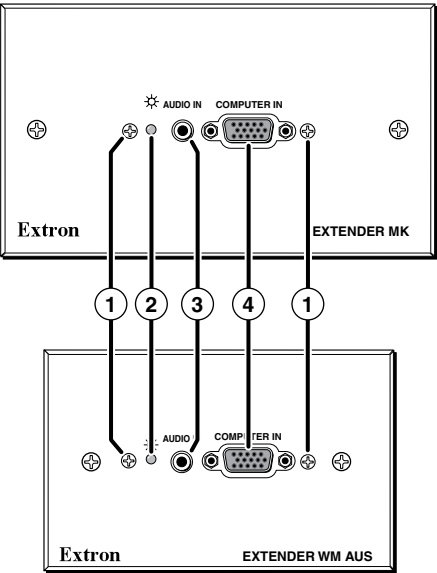
- For the Extender MK, pull the knockout box's mounting tabs forward to secure them against the back side of the wallboard or furniture as shown in the following illustration.



Securing the MK knockout box to a wall or furniture

8. Set the gain switch, and cable and test the line driver before fastening the line driver into the wall box. *The switch and cables will be inaccessible after installation.* See "Top/Rear/Bottom Panel Features and Cabling" in this chapter for details.

Front Panel Features and Cabling

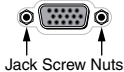


- ① **Faceplate screws** — These secure the faceplate to the rest of the line driver. Faceplate dimensions are provided in the appendix of this manual.

NOTE Do not remove these faceplate screws or the jack screw nuts on either side of the PC Input connector while the line driver is attached to the wall. If these screws are removed, the detached line driver may fall down inside the wall.

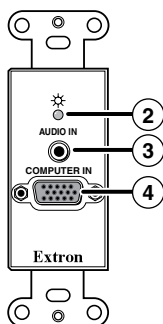
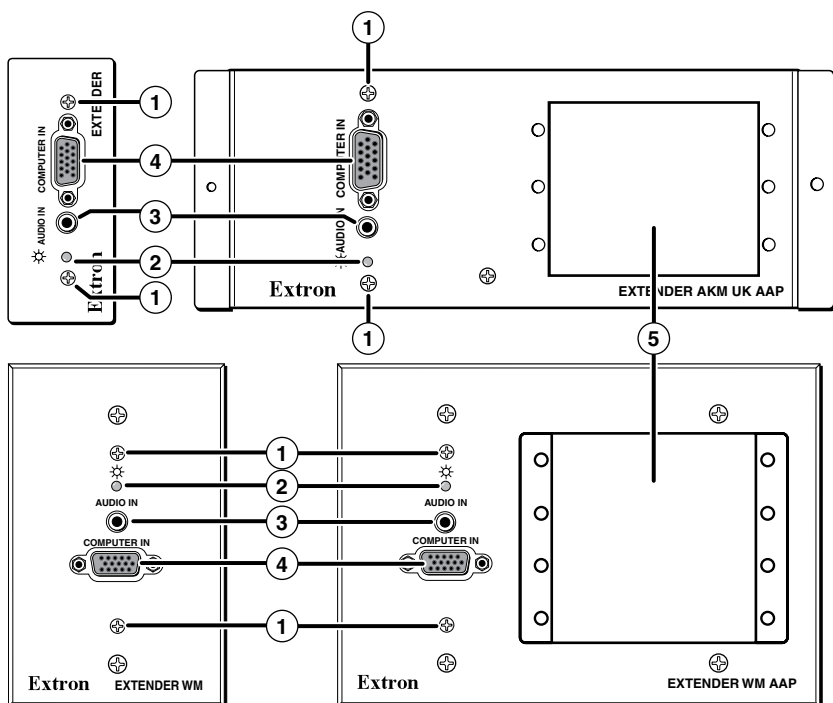
To replace the standard faceplate with a customized faceplate:

1. Set the line driver in an accessible place (do not do this while the line driver is installed in a wall or furniture), and remove the faceplate screws and the jack screw nuts on either side of the PC Input connector.
2. Fasten the new faceplate to the line driver with the faceplate screws.
3. Reattach the jack screw nuts.

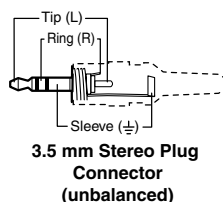


- ② **Power/signal LED** — This LED lights
- **amber** to indicate that the Extender is receiving power
 - **green** to indicate that an active sync signal is present at the input and the Extender is receiving power

NOTE The LED remains lit amber when the input signal is HDTV component video, RGB, or RsGsBs.



- ③ Audio input connector** — Plug a 3.5 mm stereo plug into this jack for unbalanced audio input. Wire the male plug as shown in the figure at right.



- ④ RGB video input connector (Computer In)** — Attach a cable from the computer to the Extender via this female 15-pin HD connector.

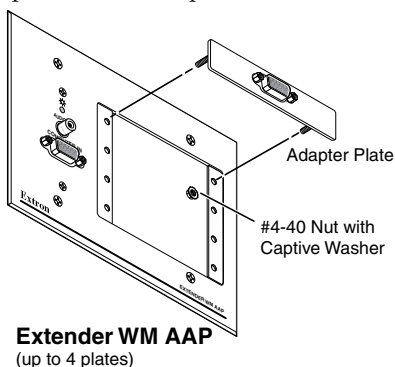
- ⑤ Opening for Architectural Adapter Plates (AAPs)** — The Extender WM AAP can have up to four optional adapter plates attached here at one time. The Extender AKM UK can hold up to three optional adapter plates at one time. The adapter plates allow for a variety of types of audio/video connectors or another device such as the Extender AAP to be added to the faceplate.

Blank plates are included with the Extender WM AAP, Extender AKM UK, and Extender AKM MAAP to cover unused spaces.

Installation, cont'd

Other adapter plates must be ordered separately. They also must be attached to the faceplate and cabled before the line driver is installed in the wall or furniture. The screws needed for installing the adapter plates are built into the plates, so no additional screws are needed.

1. Remove the blank plates from the Extender by unscrewing the nuts that fasten the plates to the faceplate.
2. Insert the adapter plate screws through the holes in the faceplate. Attach the adapter plates to the faceplate with the provided captive washers and #4-40 nuts.
3. Attach the output cables to the rear connectors of the adapter plates. Soldering is required for some connectors. Attach foil and braided shields to ground connections.

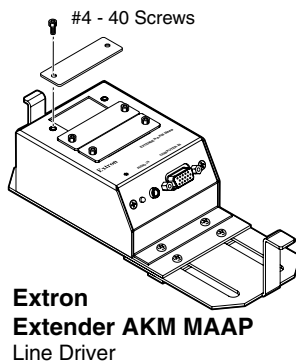


- ⑥ **Opening for Mini Architectural Adapter Plates (MAAPs)** — The Extender AKM MAAP can have up to three optional MAAP adapter plates attached here at one time to allow for a variety of types of audio/video connectors or another device to be added to the faceplate.

One double-size and one single-size blank plate are included with the Extender AKM MAAP to cover unused spaces. Other adapter plates must be ordered separately. They also must be attached to the faceplate and cabled before the line driver is installed in the wall, floor box, or furniture. The screws needed for installing the adapter plates are included with the MAAPs, so no additional screws are needed.

Refer to the picture at right and the following steps.

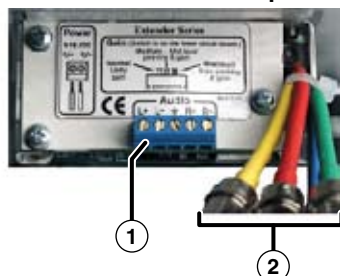
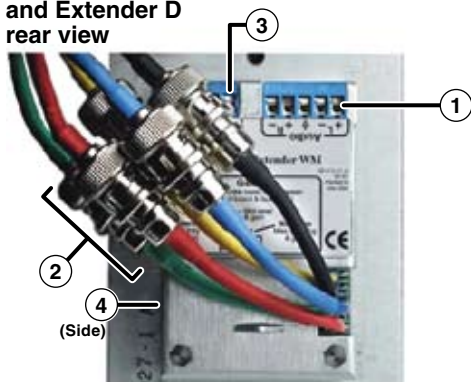
1. Insert the MAAP into the Extender AKM MAAP's faceplate opening.
2. Using an Allen wrench, secure the MAAP to the faceplate with the provided machine screws.



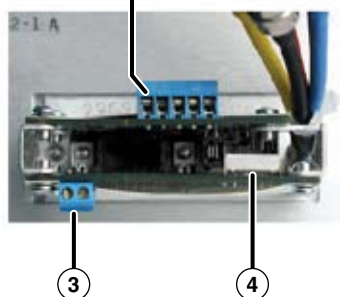
Top/Rear/Bottom panel Features and Cabling

Extender MK, Extender AAP, Extender AAP EX, Extender WM AUS, Extender AKM UK AAP, and Extender AKM MAAP
top view

Extender WM, Extender WM AAP, and Extender D
rear view

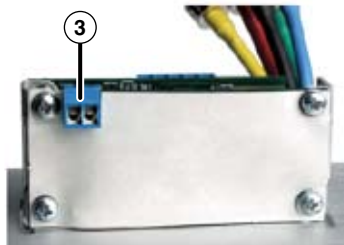


Extender MK/AAP/AAP EX, Extender AKM UK AAP, Extender AKM MAAP, Extender WM AUS
rear view



Extender MK, Extender AAP, Extender AAP EX, Extender WM AUS, Extender AKM UK AAP, and Extender AKM MAAP
bottom view

- ① Audio output connector — page 2-10
- ② RGB video output connectors — page 2-11
- ③ Power connector — page 2-11
- ④ Gain switch — page 2-11



Installation, cont'd

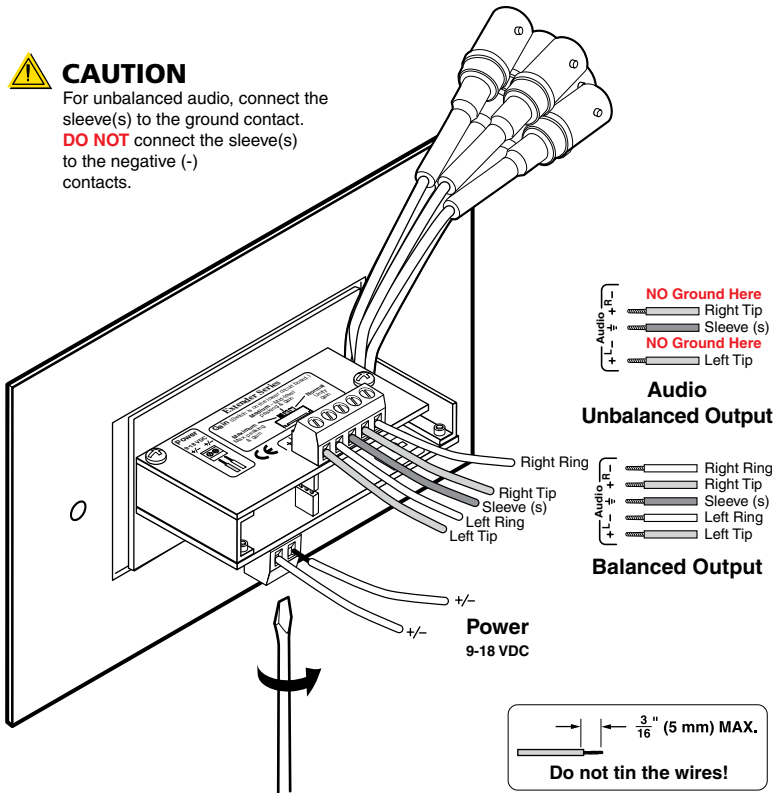
- ① **Audio output connector** — Insert wires into and tighten the screws on this 3.5 mm, 5-pole direct insertion captive screw connector for unbalanced or balanced audio output. Wire the connector as shown in the following illustrations.

CAUTION *Connect the sleeve to ground (Gnd). Connecting the sleeve to a negative (-) terminal will damage the audio output circuits.*



CAUTION

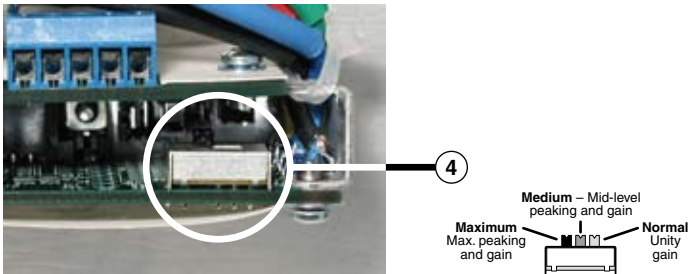
For unbalanced audio, connect the sleeve(s) to the ground contact. **DO NOT** connect the sleeve(s) to the negative (-) contacts.



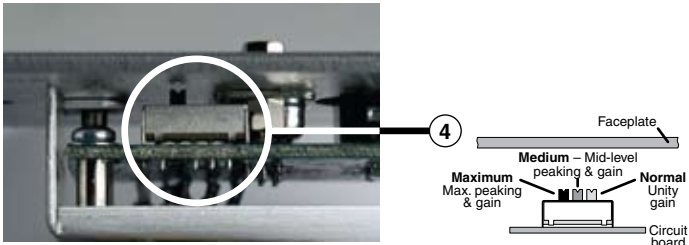
Extender WM AUS is shown here wired for balanced audio output; the circuit board configuration is the same for the Extender MK, Extender AAP, Extender AAP EX, Extender AKM UK AAP, and Extender AKM MAAP

Installation, cont'd

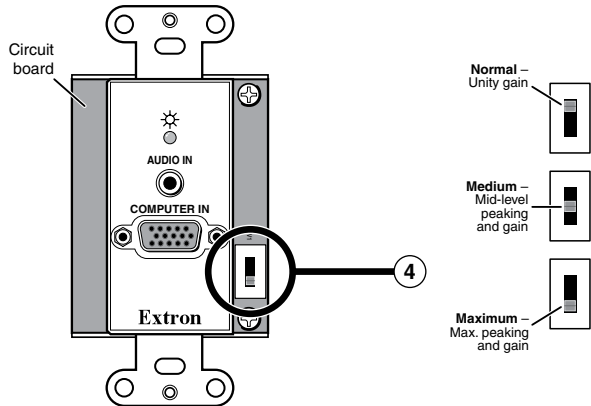
④ Gain switch —



Extender MK, Extender AAP, Extender AAP EX, Extender WM AUS, Extender AKM UK AAP, and Extender AKM MAAP gain switch location (access from the rear)



Extender WM and Extender WM AAP gain switch location (access from the side)



Extender D gain switch location (like the Extender WM switch, but accessible from the front)

To compensate for cable resistance and capacitance, use a small screwdriver to slide this switch to select the level of video gain that yields the sharpest, smear-free picture.

Normal — unity gain (no signal boost)

Medium — mid-level peaking and gain

Maximum — maximum amount of peaking and gain. Select this for use with longer cables.

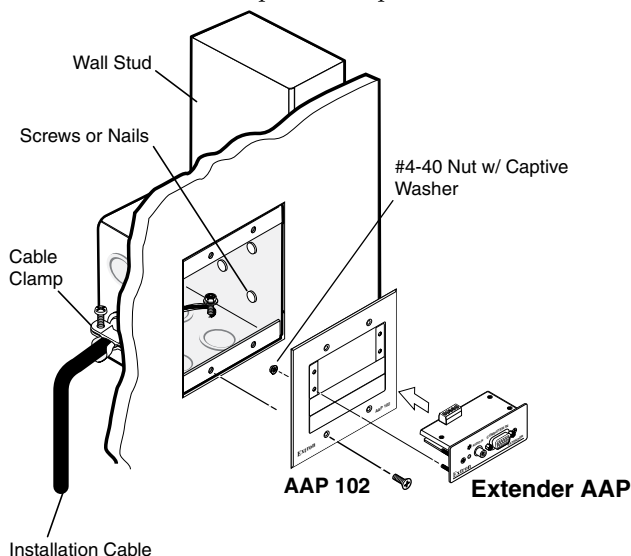
NOTE *Adjust the gain before installing the Extender into a wall, furniture, or equipment, as the gain switch will be inaccessible after installation.*

Mounting the Extenders

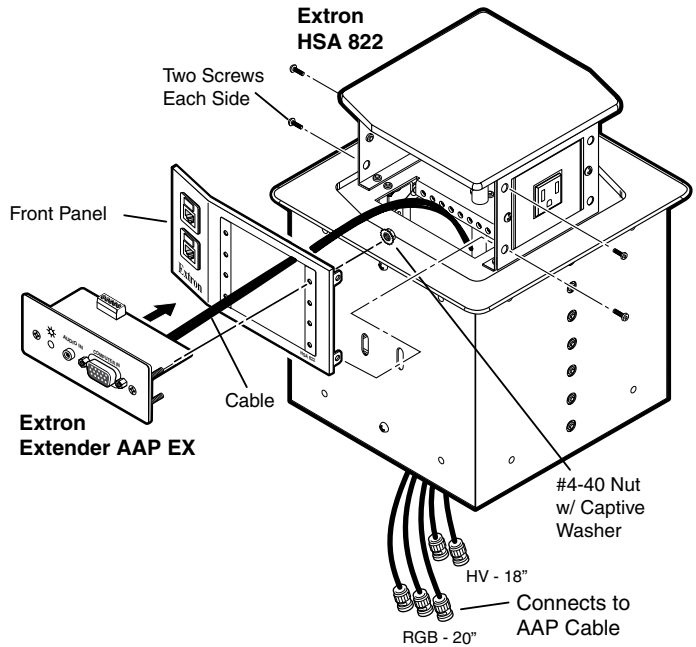
Mounting the Extender AAP or Extender AAP EX into an AAP wall plate or device faceplate

The Extender AAP or Extender AAP EX and any other adapter plates must be attached to a device faceplate or AAP wall plate and cabled before the device or wall plate is pretested or installed in a wall or furniture.

1. Before any user-supplied cables are attached, insert the Extender AAP or Extender AAP EX's output BNC connectors and wires through the opening in the front of the wall plate or device faceplate.
2. Insert the AAP's threaded standoffs through the holes in the device's faceplate or AAP wall plate.
3. Using the provided #4-40 nuts and captive washers, secure the Extender to the faceplate/wall plate.



Mounting the Extender AAP or Extender AAP EX to a device or wall plate



Mounting the Extender AAP EX to an HSA faceplate

4. Repeat steps 1, 2, and 3 to mount other AAPs. Cover any openings in the faceplate with blank plates (provided).
 5. Be sure to include the AAP connectors as part of the installation pretest before final installation of the faceplate.
- For more detailed installation information, refer to the installation guide shipped with the faceplate or the HSA.

Pre-installation testing/troubleshooting

Before mounting the line driver, test the system to make sure that the connections and settings are correct.

1. Apply power to the line driver. The power/signal LED on the line driver lights amber to indicate that it is receiving power.
2. If the LED does not light, check the wiring at both the line driver and the power supply, and make sure the power supply is connected to a power source.

If the image does not appear or there is no sound

1. Make sure that all the devices are powered on.
2. Ensure that the connectors are wired correctly at both ends of the cables. Audio cables must be wired for an unbalanced stereo input signal and for the appropriate (unbalanced or balanced) output signal.
3. If the input is from a laptop computer and no picture appears, use a laptop breakout cable for the input connection. Check the computer's user's guide or contact Extron to determine if special commands are required to output video to the external video port. Also, many laptops' screens shut off after the external video port is activated.
4. Call the Extron S3 Sales and Technical Support Hotline if the image still does not appear or there is no sound.

If the image is not displayed correctly

1. If the picture is too bright or too dark, if the edges of the image seem to exceed their boundaries, or if thin lines and sharp edges look thick and fuzzy, change the gain setting. See "Gain switch" on page 2-12.

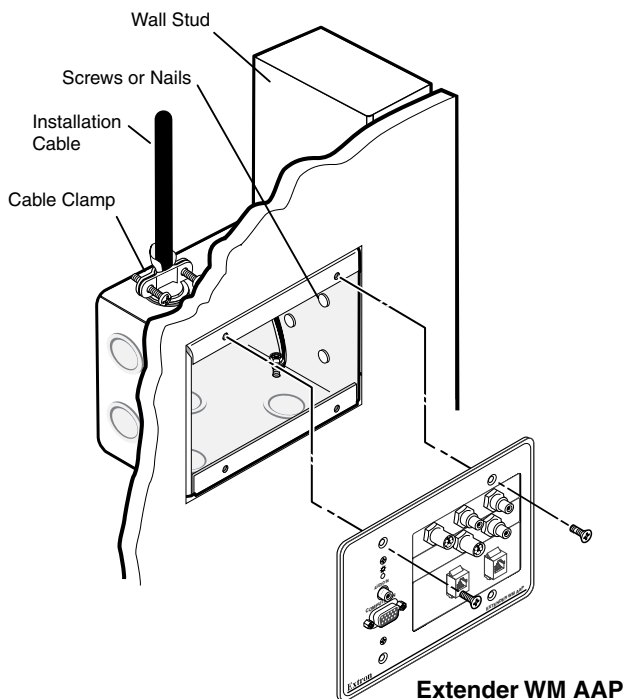
If the picture appears and is stable, but it has ghosting or blooming, verify that the video input is properly terminated. If the problem is not resolved by changing the termination, try using a different input cable. Poor quality or damaged cable can cause ghosting and blooming.

2. If the picture still is not displayed correctly, call the Extron S3 Sales and Technical Support Hotline.

Once the system has been cabled and tested, the line driver can be installed in the wall, furniture, or equipment.

Mounting the Extender WM, Extender WM AAP, or Extender WM AUS to the wall box

1. Remove power from the line driver by disconnecting the power supply.
2. Place the line driver through the opening in the wall or furniture and into the wall box. Take care not to damage the output cables, which fit behind the line driver at the back of the wall box.
3. Mount the line driver's faceplate to the wall box with machine screws as shown in the following illustration.

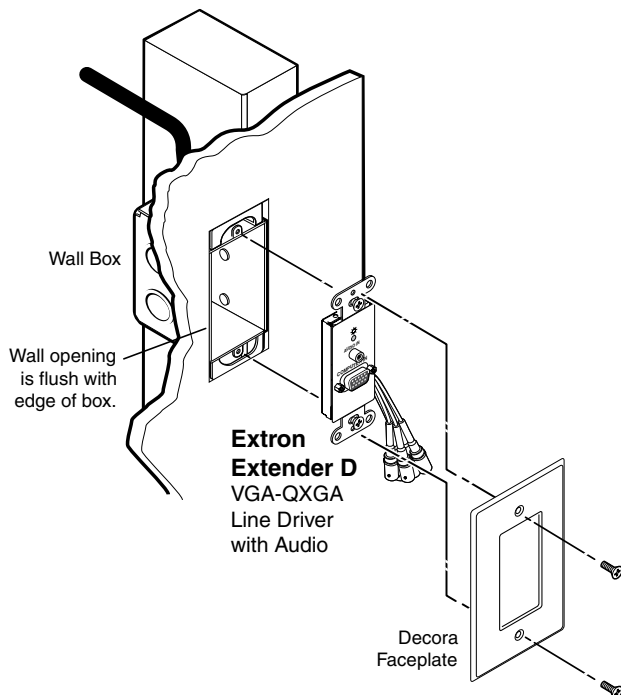


Mounting the line driver to the wall box

4. Reconnect the power supply and restore power to the equipment.

Mounting the Extender D

1. Remove power from the line driver by disconnecting the power supply.
2. Place the Extender D through the opening in the wall or furniture and into the wall box. Take care not to damage the output cables, which fit behind the line driver at the back of the wall box.
3. Mount the Extender D to the wall box with machine screws as shown in the following illustration.

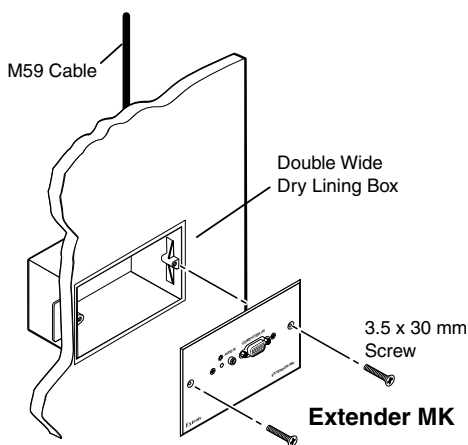


Mounting the Extender D to the wall box

4. Attach the Decora wall plate to the Extender D as shown in the illustration above.
5. Reconnect the power supply and restore power to the equipment.

Mounting the Extender MK to the knockout box

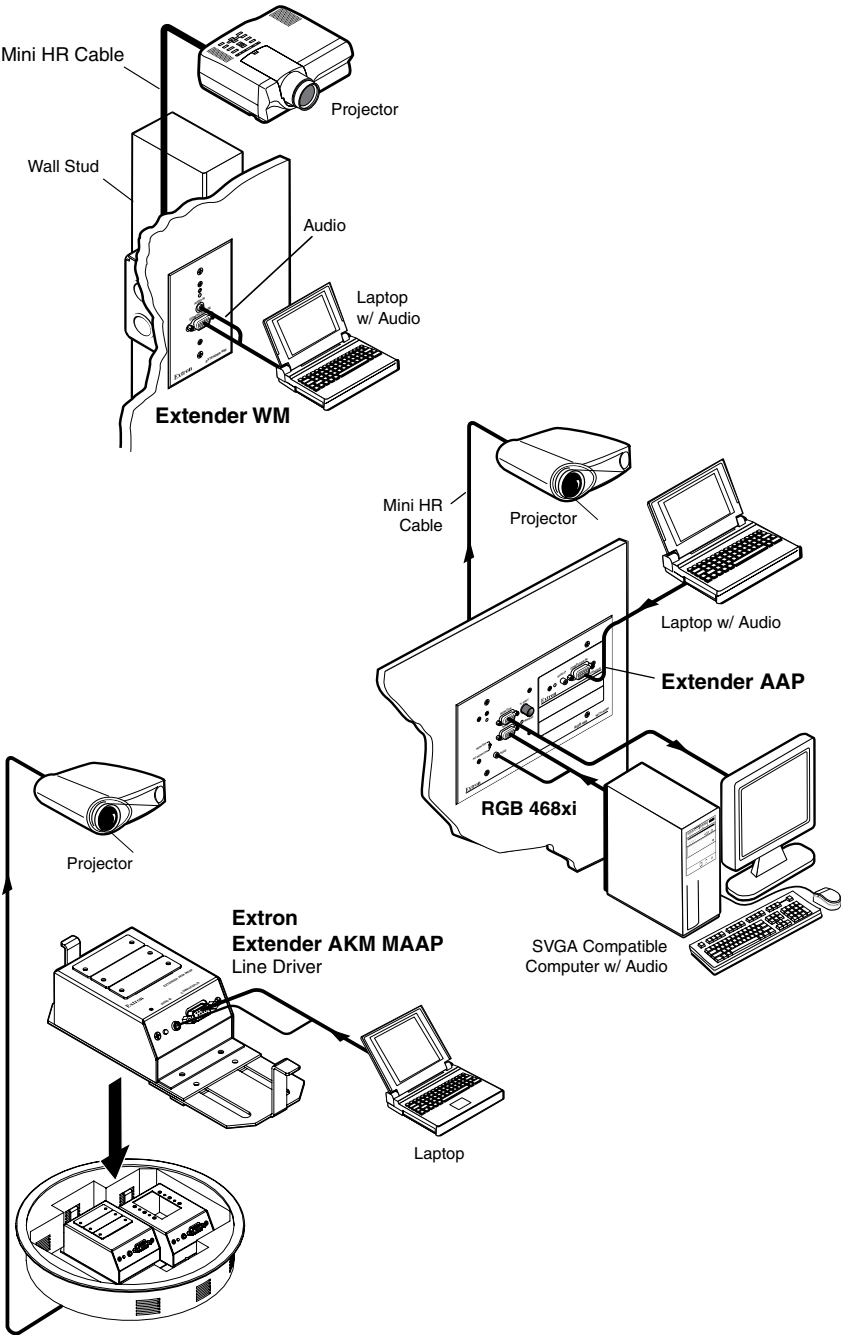
1. Remove power from the line driver by disconnecting the power supply.
2. Place the line driver through the opening in the wall or furniture and into the knockout box. Take care not to damage the cables, which lie next to the line driver at the side of the box.
3. Mount the line driver's faceplate to the knockout box with machine screws as shown in the following illustration.



Mounting the Extender MK to the knockout box

4. Reconnect the power supply and restore power to the equipment.

Application Diagrams





Extender Series

Appendix A

Reference

Specifications

Ordering Information

Accessories

Dimensions

Templates

Reference

Specifications

Video

Gain	0 dB, 0.6 dB, 1.2 dB, selectable (when input is 0.7 Vp-p, output is 0.7 V, 0.75 V, 0.8 Vp-p)
Bandwidth.....	300 MHz (-3 dB)

NOTE *ID bits are terminated (pins 4 and 11).*

Video input

Number/signal type.....	1 VGA–QXGA RGBHV, RGBS, RGSB, RsGsBs, HDTV component video
Connectors	(1) 15-pin HD female
Nominal level	1.0 Vp-p for Y of component video 0.7 Vp-p for RGB and for R-Y and B-Y of component video
Minimum/maximum levels.....	Analog: 0.3 V to 1.5 Vp-p with no offset at unity gain
Impedance.....	75 ohms
Horizontal frequency.....	15 kHz to 135 kHz
Vertical frequency.....	30 Hz to 170 Hz
Input coupling	DC

Video output

Number/signal type.....	1 VGA–QXGA RGBHV, RGBS, RGSB, RsGsBs, HDTV component video
Connectors	
Extender AAP EX.....	5 BNC female on 18" (HV) and 20" (RGB) pigtails
All other models.....	5 BNC female on 3" pigtails
Nominal level	1.0 Vp-p for Y of component video 0.7 Vp-p for RGB and for R-Y and B-Y of component video
Minimum/maximum levels.....	Analog: 0.3 V to 1.5 Vp-p with no offset at unity gain
Impedance.....	75 ohms
DC offset.....	±5 mV with input at 0 offset
Return loss.....	<-35 dB @ 5 MHz

Sync

Input type.....	RGBHV, RGBS, RGsB, RsGsBs, bi-level and tri-level component video sync
Output type.....	RGBHV, RGBS, RGsB, RsGsBs, bi-level and tri-level component video sync
Input level	2.0 V to 5.0 Vp-p
Output level	TTL: 5 Vp-p, unterminated
Input impedance	510 ohms
Output impedance	75 ohms
Max. propagation delay	18.8 ns
Max. rise/fall time	4 ns
Polarity.....	Positive or negative (follows input)

Audio

Gain	Unbalanced output: 0 dB; balanced output: +6 dB
Frequency response	20 Hz to 20 kHz, ± 0.5 dB
THD + Noise	0.025% @ 1 kHz, 0.020% @ 20 kHz at nominal level
S/N.....	>90 dB at rated maximum output
Stereo channel separation	>75 dB @ 20 Hz to 20 kHz

Audio input

Number/signal type.....	1 stereo, unbalanced
Connectors	(1) 3.5 mm mini stereo jack
Impedance	>10k ohms unbalanced, DC coupled
Nominal level	-10 dBV (316 mVrms)
Maximum level.....	+6 dBV, (unbalanced) at 1% THD+N

Audio output

Number/signal type.....	1 stereo, balanced/unbalanced
Connectors	Extender WM, Extender WM AUS, Extender WM AAP, Extender D (1) 3.5 mm direct insertion captive screw connector, 5 pole Extender AAP, Extender AAP EX, Extender MK, Extender AKM UK AAP, Extender WM AUS, Extender AKM MAAP (1) 3.5 mm captive screw connector, 5 pole
Impedance.....	50 ohms unbalanced, 100 ohms balanced

Reference, cont'd

Nominal level	-2 dBu, balanced; -10 dBV unbalanced
Maximum level (Hi-Z)	+14 dBu, balanced, at 1% THD+N
Maximum level (600 ohm).....	+6 dBm, balanced, at 1% THD+N

NOTE $0\text{ dBu} = 0.775\text{ Vrms}$, $0\text{ dBV} = 1\text{ Vrms}$, $0\text{ dBV} \approx 2\text{ dBu}$

General

External power supply	100 VAC to 240 VAC, 50-60 Hz, external; to 12 VDC, 1 A (max.), regulated
Power input requirements	12 VDC, 0.2 A
Temperature/humidity	Storage: -40 to +158 °F (-40 to +70 °C) / 10% to 90%, noncondensing Operating: +32 to +122 °F (0 to +50 °C) / 10% to 90%, noncondensing
Cooling	Convection, no vents
Mounting	
Floor box mount	
Extender AKMUKAAP	Ackerman UK floor box mountable
Extender AKMMAAP	Ackerman floor box mountable in either a GB2 or a GB3 mounting space
Furniture mount	
Extender AAP EX.....	Mountable in an optional HSA 800 Series or HSA 400 Series Hideaway Surface Access Enclosure, which can be mounted in furniture
Extender WM AUS....	Wall or furniture mountable in a standard Australian electrical wall box
Extender AAP	Wall or furniture mountable with optional AAP mounting faceplates
All other models.....	Wall or furniture mountable in a standard US electrical wall box
Enclosure type	Metal (Extender D has a metal faceplate and a plastic Decora wall plate.)
Enclosure dimensions	
Extender AAP, Extender AAP EX	
Faceplate.....	1.4" H x 3.5" W x 0.1" D (3.6 cm H x 8.9 cm W x 0.3 cm D) (double space high AAP plate)
Buffer.....	1.1" H* x 2.75" W x 1.2" D (2.8 cm H* x 7.0 cm W x 3.0 cm D) (*Height excludes BNC connectors and cables.)

Extender WM

Faceplate.....	4.5" H x 2.8" W x 0.1" D (11.4 cm H x 7.1 cm W x 0.3 cm D) (1 gang)
Buffer.....	2.7" H x 1.8" W x 0.75" D* (6.9 cm H x 4.6 cm W x 1.9 cm D*) (*Depth excludes BNC connectors and cables.)

Extender WM AUS

Faceplate.....	3.0" H x 4.7" W x 0.1" D (7.6 cm H x 11.8 cm W x 0.3 cm D)
Buffer.....	2.75" H* x 1.1" W x 1.2" D (7.0 cm H* x 2.8 cm W x 3.0 cm D) (*Height excludes BNC connectors and cables.)

Extender WM AAP

Faceplate.....	4.5" H x 6.4" W x 0.1" D (11.4 cm H x 16.3 cm W x 0.3 cm D) (3 gang)
Buffer.....	2.7" H x 1.8" W x 0.75" D* (6.9 cm H x 4.6 cm W x 1.9 cm D*) (*Depth excludes BNC connectors and cables.)

Extender MK

Faceplate.....	3.4" H x 5.7" W (8.6 cm H x 14.4 cm W) (UK knockout box size)
Buffer.....	1.1" H* x 2.75" W x 1.2" D (2.8 cm H* x 7.0 cm W x 3.0 cm D) (*Height excludes BNC connectors and cables.)

Extender AKM UK AAP

Faceplate.....	3.0" H x 8.1" W x 0.6" D (7.6 cm H x 20.6 cm W x 1.5 cm D)
Buffer.....	1.1" H* x 2.75" W x 1.2" D (2.8 cm H* x 7.0 cm W x 3.0 cm D) (*Height excludes BNC connectors and cables.)

Extender AKM MAAP

Faceplate.....	1.67" H x 6.12" to 7.85" W* x 3.0" D (4.1 cm H x 15.5 cm to 19.9 cm W* x 7.6 cm D) *Width is adjustable.
Buffer.....	1.8" H x 4.4" W x 3.0" D (4.6 cm H x 11.2 cm W x 7.6 cm D)

Reference, cont'd

Extender D

Faceplate.....	2.6" H* x 1.3" W x 0.1" D (6.6 cm H* x 3.3 cm W x 0.3 cm D) (Fits the opening in a 1 gang Decora faceplate. *Height is 3.8" [9.7 cm] including mounting tabs.)
Buffer.....	2.7" H x 1.8" W x 0.75" D* (6.9 cm H x 4.6 cm W x 1.9 cm D*) (*Depth excludes BNC connectors and cables.)

Product weight

Extender AAP, Extender AAP EX, Extender WM	0.2 lbs (0.1 kg)
Extender WM AUS.....	0.3 lbs (0.1 kg)
Extender WM AAP	0.4 lbs (0.2 kg)
Extender MK.....	0.5 lbs (0.3 kg)
Extender AKM UK AAP ..	0.6 lbs (0.3 kg)
Extender AKM MAAP.....	1.2 lbs (0.5 kg)
Extender D	0.2 lbs (0.1 kg)

Shipping weight

Extender AAP, Extender AAP EX	2 lb (1 kg)
All other models.....	3 lbs (2 kg)

Vibration.....	ISTA 1A in carton (International Safe Transit Association)
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Regulatory compliance

Safety.....	CE, CUL, UL
EMI/EMC	CE, C-tick, FCC Class A, ICES, VCCI

MTBF.....	30,000 hours
Warranty	3 years parts and labor

NOTE *All nominal levels are at ±10%.*

NOTE *Specifications are subject to change without notice.*

Ordering Information

This section lists part numbers for each Extender and Extender kit.

Model	Part numbers
Extender AAP ¹ (black, white, RAL9010 white)	70-147-12, -22, -52
Extender AAP EX ¹ (black)	70-147-72
Extender WM ¹ (black, white)	60-398-12, -22
Extender WM AAP ¹ (gray, black, white, RAL9010 white)	60-405-02, -12, -22, -52
Extender WM AUS ¹ (white)	60-398-32
Extender D ¹ (black, white)	60-759-12, -22
Extender MK ¹ (black & white, RAL9010 white)	60-406-12, -52
Extender AKM UK AAP ^{1,2} (gray)	60-627-01
Extender AKM MAAP ^{1,2} (black)	60-727-02

¹An international, 12 VDC, 2 A, external power supply (#70-055-01) and this user's manual (#68-552-01) ship with all Extender products.

²In addition, a double-size, blank AAP (#70-090-02); a single-size, blank AAP (#70-090-01); and the *Extender AKM UK AAP Installation Guide* ship with the Extender AKM UK AAP.

³In addition, a double-size, blank MAAP (#991994-2); a single-size, blank MAAP (#991993-2); and the *Extender AKM MAAP Installation Guide* ship with the Extender AKM MAAP.

Accessories

Mounting accessories

AAP mounting accessories	Part numbers
AAP 102 – 2 gang wall plate (gray, black, white, RAL9010 white)	60-300-01, -02, -03, -05
AAP 104 – 4 gang wall plate (black, white, RAL9010 white)	60-301-02, -03, -05
AAP 201 – half rack wide, 1U high AAP mounting frame (gray, black, white)	60-302-01, -02, -03
AAP 201 – half rack wide, 1U high AAP mounting frame (black, white)	60-303 -02, -03

Reference, cont'd

Mud rings/mounting brackets	Part numbers
MR 100 – 1-gang modular plastic mud ring (black, white)	70-519-12, -13
MR 100D – 1-gang Decora®-style modular plastic mud ring (black)	70-581-12
MR 300 – 3-gang modular plastic mud ring (black, white)	70-519-32, -33
MR 300D – 3-gang Decora®-style modular plastic mud ring (black)	70-581-32
MK 2-gang metal mounting bracket/ mud ring (black, white, RAL9010 white)	70-086-16, -26, -56

Cables

Miscellaneous cables	Part numbers
SY VGAM-RGBHVM cable – 15-pin VGA male to 5 BNC male, 6'	26-533-02
SY VGAM-RGBHVF cable – 15-pin VGA male to 5 BNC female, 3'	26-548-12

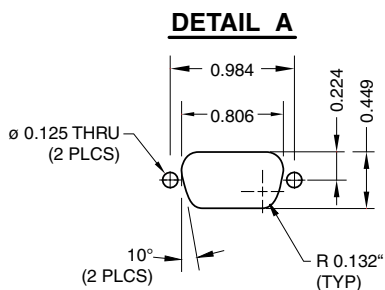
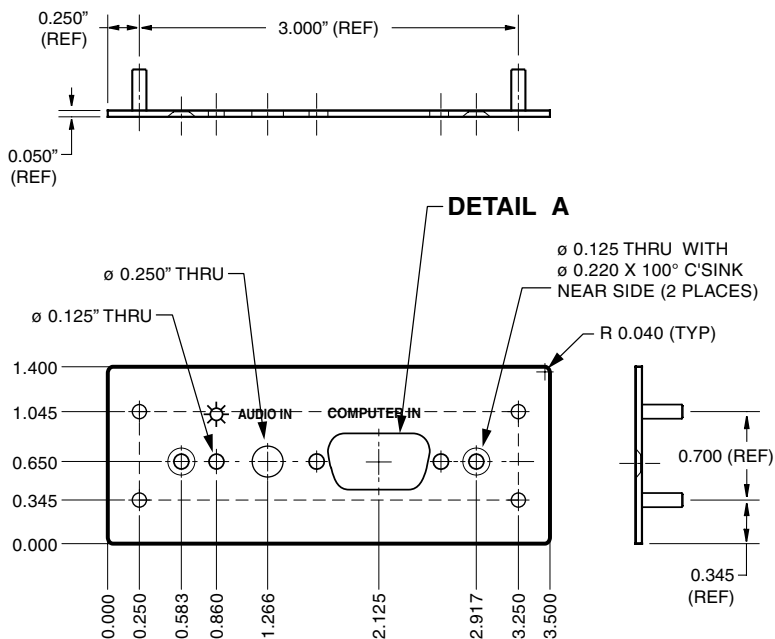
Male-to-female VGA with audio cables	Part numbers
VGA-A M-F MD/3 /6 /12 /25 /35 /50 – with molded connectors – 3' (90 cm), 6' (1.8 m), 12' (3.6 m), 25' (7.6 m), 35' (10.6 m), 50' (15.2 m)	26-491-01, -02, -03, -04, -07, -08
VGA-A M-F BK/3 /6 /12 /25 /35 /50 – with backshell connectors – 3' (90 cm), 6' (1.8 m), 12' (3.6 m), 25' (7.6 m), 35' (10.6 m), 50' (15.2 m)	26-491-09, -10, -11, -12, -06, -05

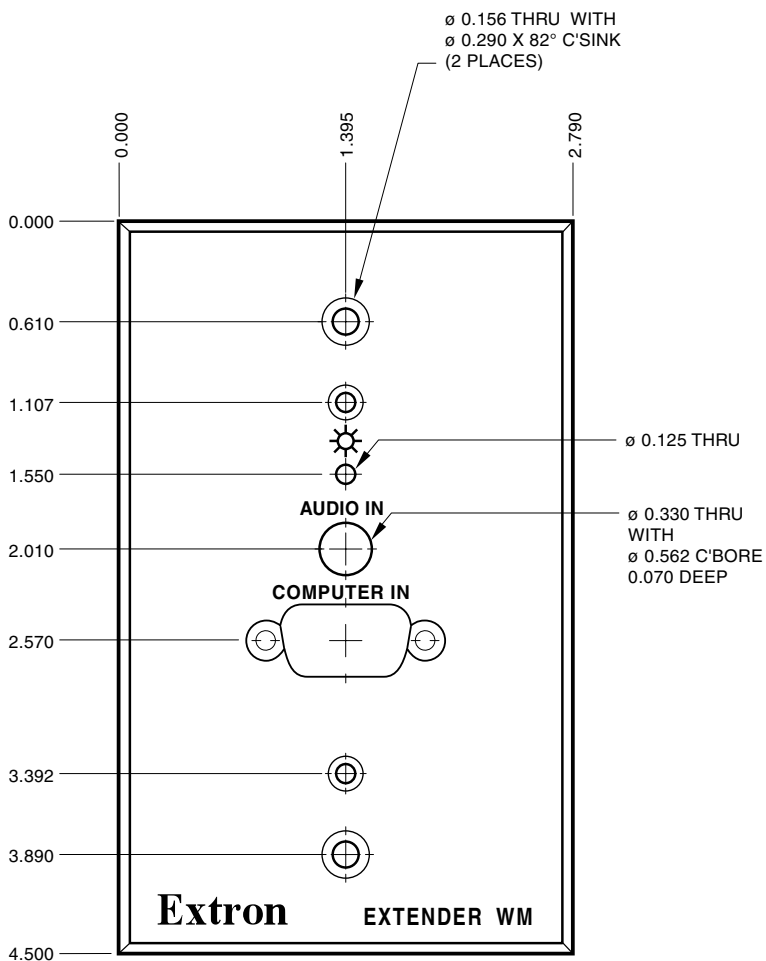
Dimensions

NOTE The drawings in this section are **not** full size.
Do not scale.

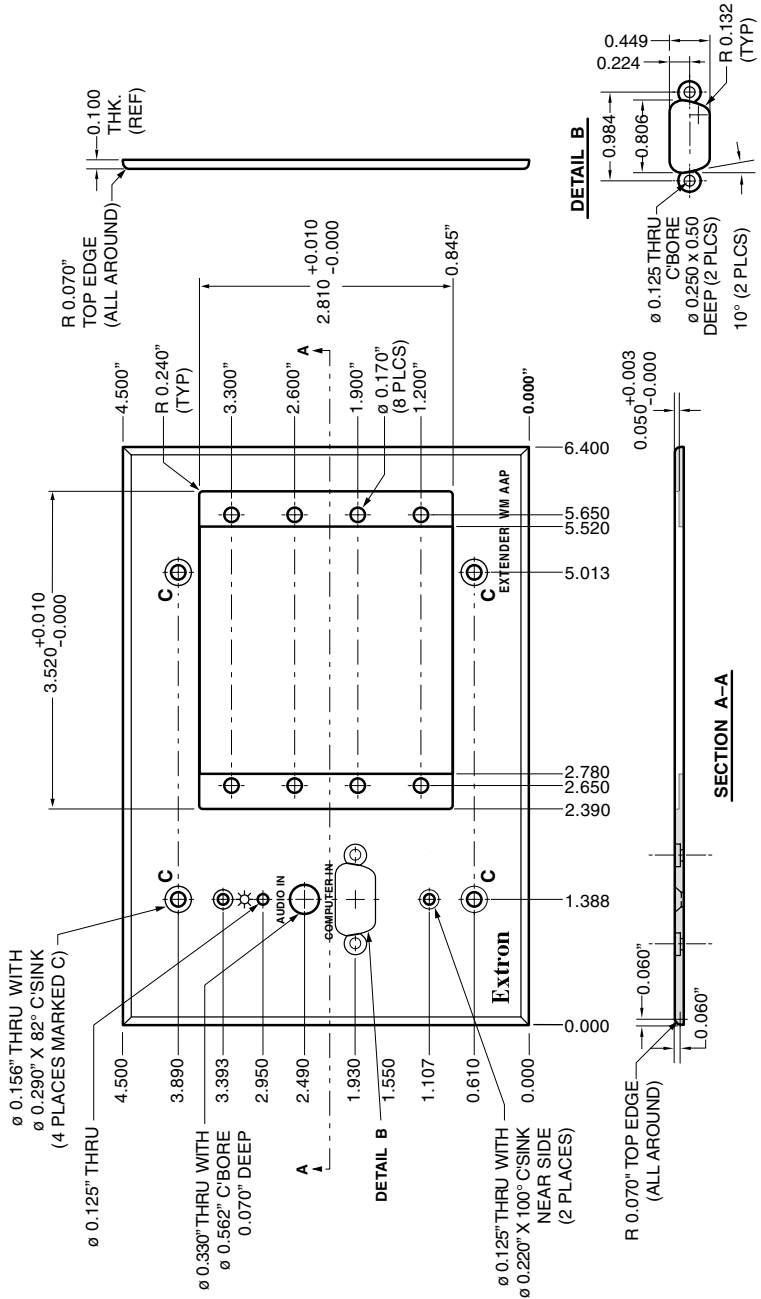
NOTE All dimensions are given in inches.

Extender AAP and Extender AAP EX dimensions

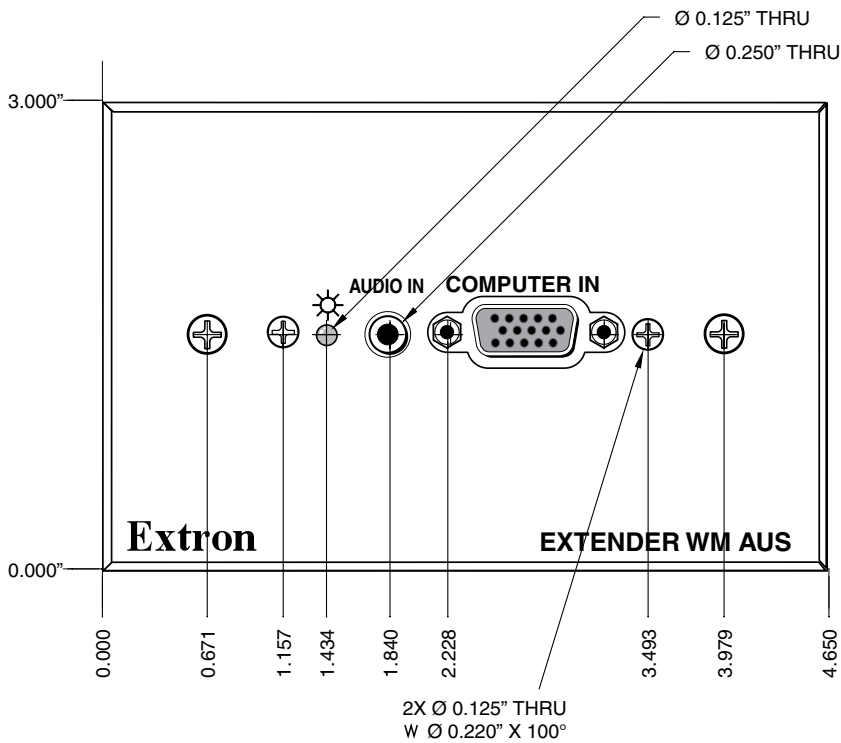


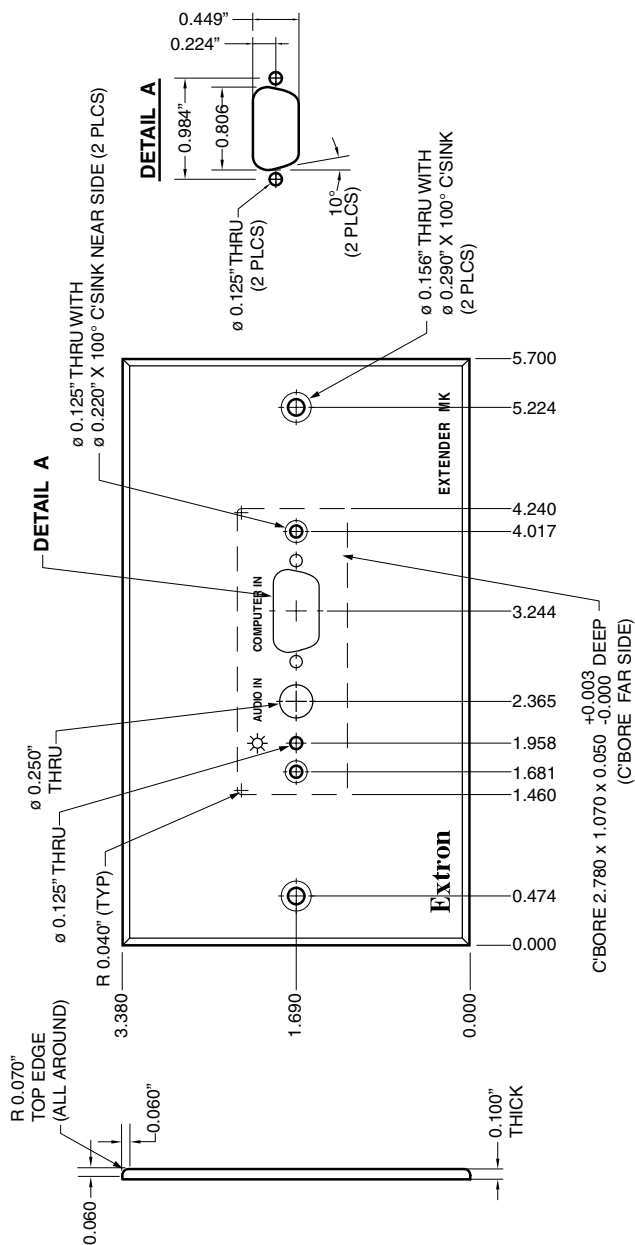


Extender WM AAP dimensions

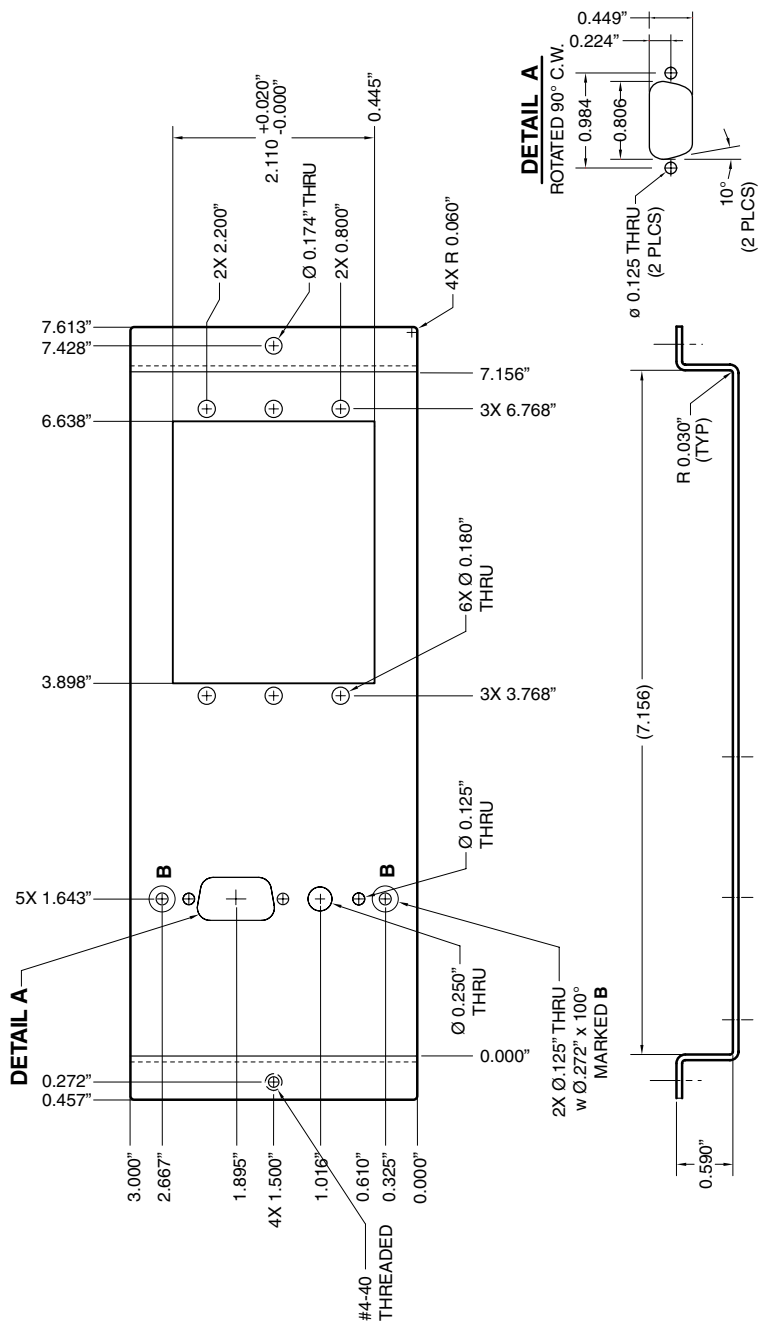


Extender WM AUS dimensions

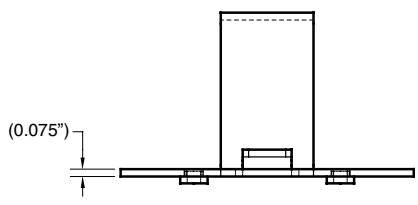
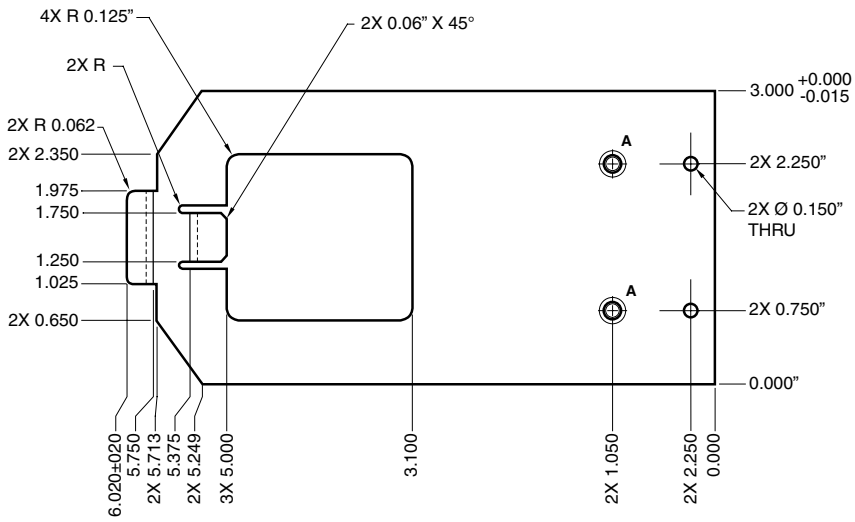




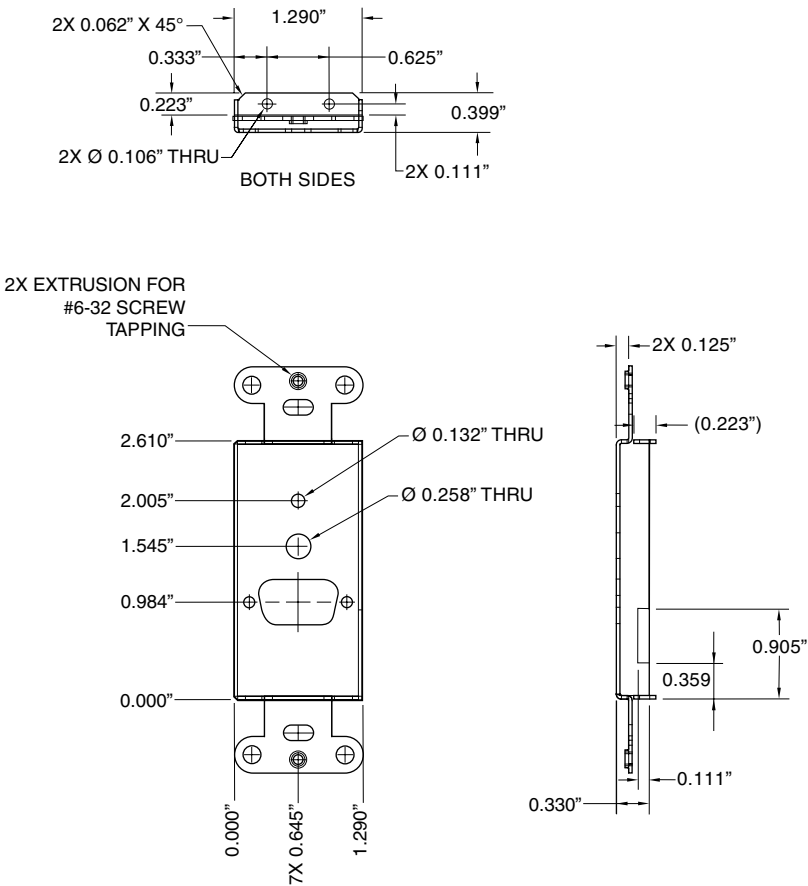
Extender AKM UK dimensions



Extender AKM MAAP dimensions



Extender D dimensions

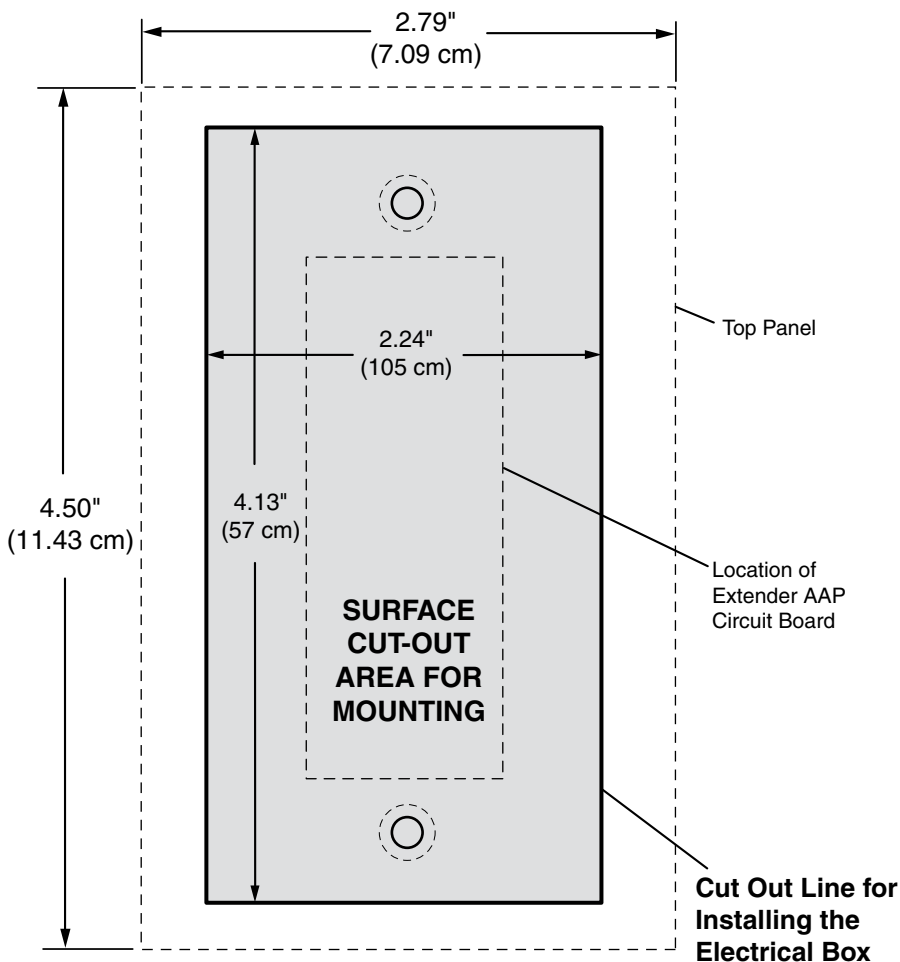


Templates

NOTE Always check and use the dimensions given in this appendix.

Cut-Out Template for the Extron

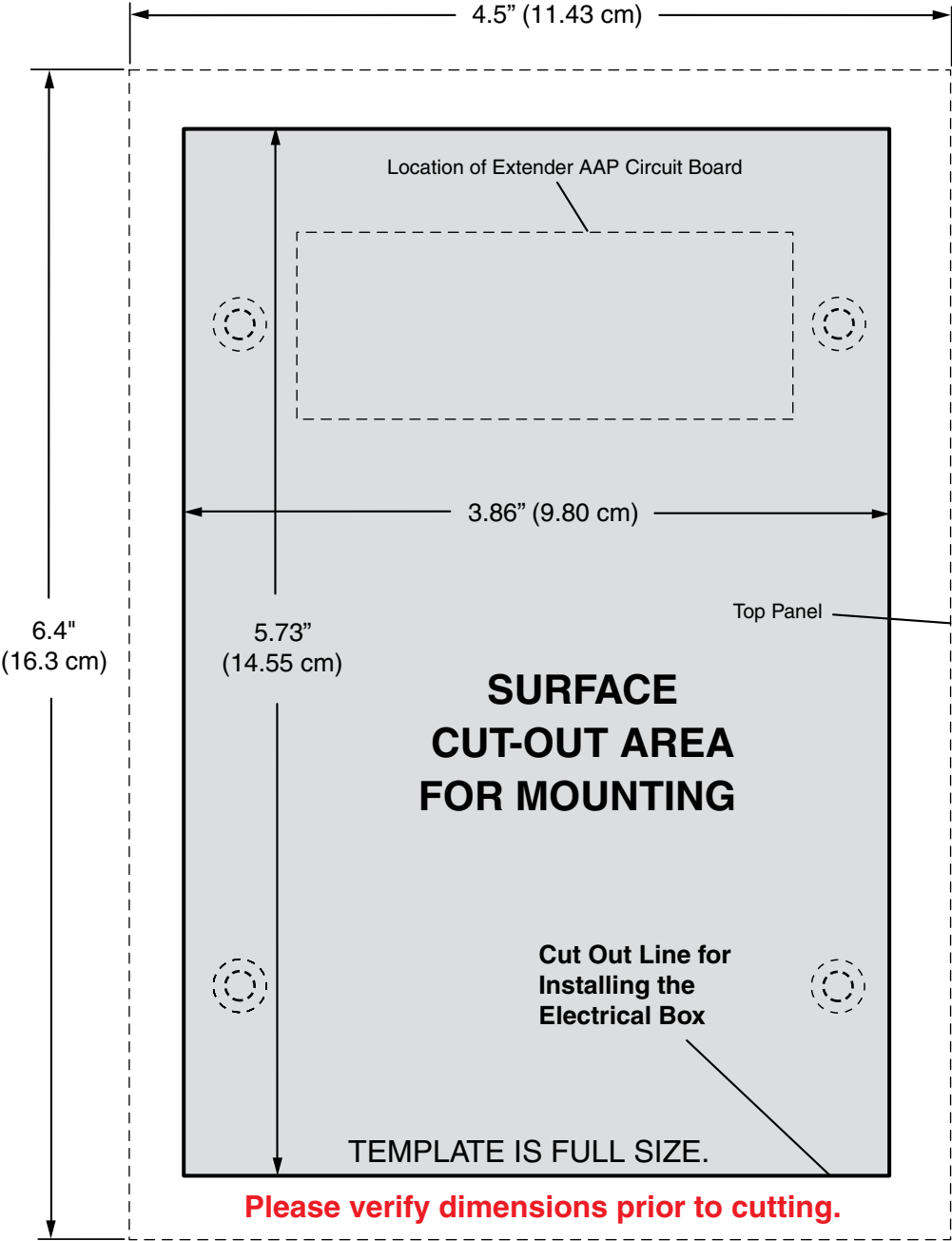
Extender WM



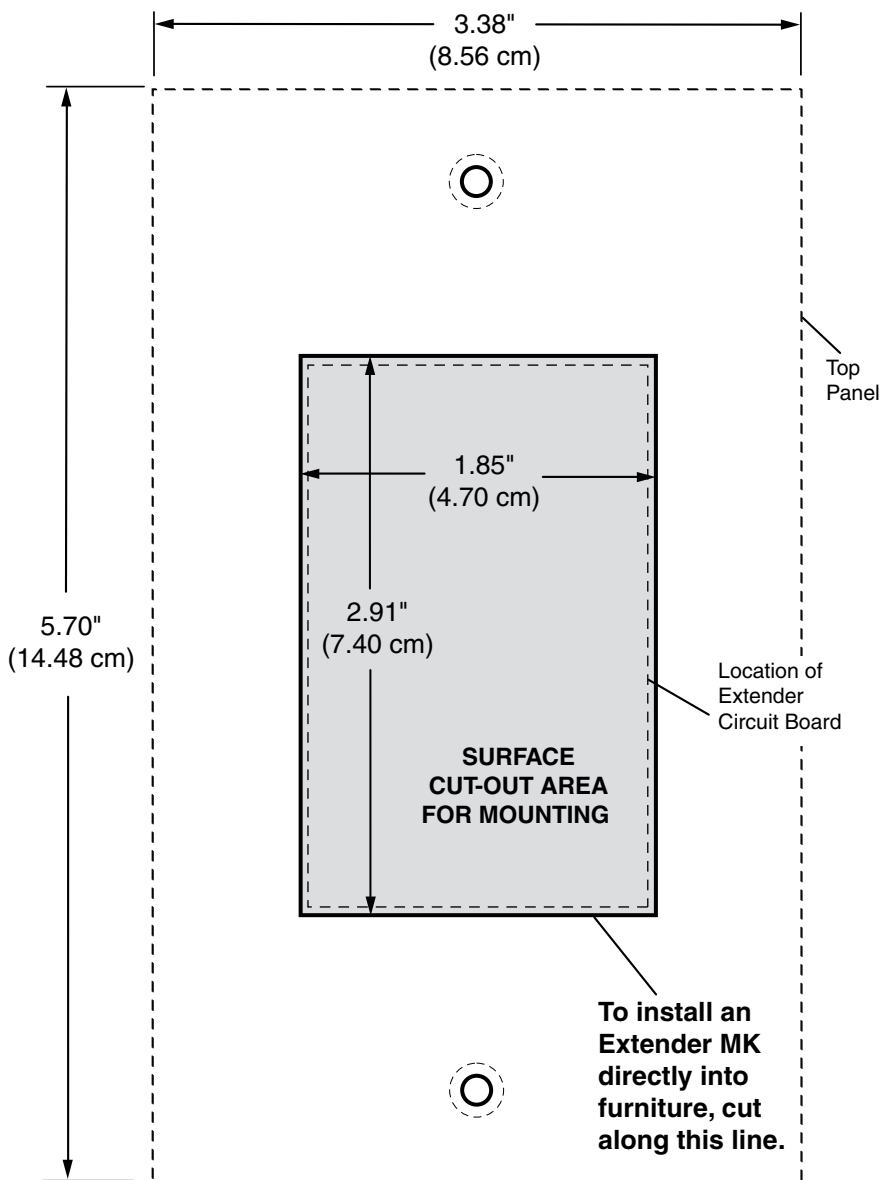
TEMPLATE IS FULL SIZE.

Please verify dimensions prior to cutting.

Cut-Out Template for the Extron **Extender WM AAP**



Cut-Out Template for the Extron
Extender MK

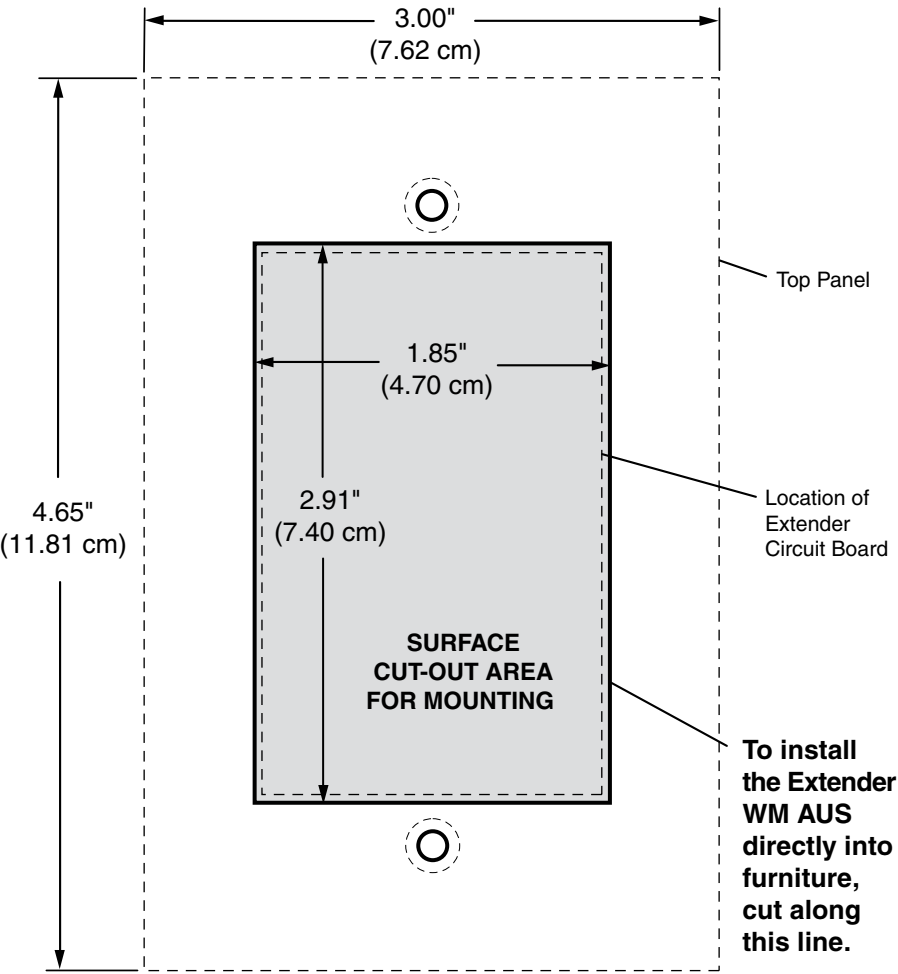


TEMPLATE IS FULL SIZE.

Please verify dimensions prior to cutting.

Cut-out Template for the Extron

Extender WM AUS



TEMPLATE IS FULL SIZE.

Please verify dimensions prior to cutting.

Extron's Warranty

Extron Electronics warrants this product against defects in materials and workmanship for a period of three years from the date of purchase. In the event of malfunction during the warranty period attributable directly to faulty workmanship and/or materials, Extron Electronics will, at its option, repair or replace said products or components, to whatever extent it shall deem necessary to restore said product to proper operating condition, provided that it is returned within the warranty period, with proof of purchase and description of malfunction to:

**USA, Canada, South America,
and Central America:**

Extron USA
1001 East Ball Road
Anaheim, CA 92805
U.S.A.

Japan:

Extron Japan
Kyodo Building, 16 Ichibancho
Chiyoda-ku, Tokyo 102-0082
Japan

Europe, Africa, and the Middle East:

Extron Europe
Hanzeboulevard 10
3825 PH Amersfoort
The Netherlands

China:

Extron China
686 Ronghua Road
Songjiang District
Shanghai 201611
China

Asia:

Extron Asia
135 Joo Seng Road #04-01
PM Industrial Bldg.
Singapore 368363
Singapore

Middle East:

Extron Middle East
Dubai Airport Free Zone
F12, PO Box 293666
United Arab Emirates, Dubai

This Limited Warranty does not apply if the fault has been caused by misuse, improper handling care, electrical or mechanical abuse, abnormal operating conditions or non-Extron authorized modification to the product.

If it has been determined that the product is defective, please call Extron and ask for an Applications Engineer at (714) 491-1500 (USA), 31.33.453.4040 (Europe), 65.6383.4400 (Asia), or 81.3.3511.7655 (Japan) to receive an RA# (Return Authorization number). This will begin the repair process as quickly as possible.

Units must be returned insured, with shipping charges prepaid. If not insured, you assume the risk of loss or damage during shipment. Returned units must include the serial number and a description of the problem, as well as the name of the person to contact in case there are any questions.

Extron Electronics makes no further warranties either expressed or implied with respect to the product and its quality, performance, merchantability, or fitness for any particular use. In no event will Extron Electronics be liable for direct, indirect, or consequential damages resulting from any defect in this product even if Extron Electronics has been advised of such damage.

Please note that laws vary from state to state and country to country, and that some provisions of this warranty may not apply to you.

Extron USA - West Headquarters +800.633.9876 Inside USA / Canada Only +1.714.491.1500 +1.714.491.1517 FAX	Extron USA - East +800.633.9876 Inside USA / Canada Only +1.919.863.1794 +1.919.863.1797 FAX	Extron Europe +800.3987.6673 Inside Europe Only +31.33.453.4040 +31.33.453.4050 FAX	Extron Asia +800.7339.8766 Inside Asia Only +65.6383.4400 +65.6383.4664 FAX	Extron Japan +81.3.3511.7655 +81.3.3511.7656 FAX	Extron China +400.883.1568 Inside China Only +86.21.3760.1568 +86.21.3760.1566 FAX	Extron Middle East +971.4.2991800 +971.4.2991880 FAX
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